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THE EFFECT OF MOOD ON LANGUAGE INTERPRETATION

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ABSTRACT

THESIS: The Effect of Mood on Language Interpretation

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There is a dearth in the literature examining the relationship between emotion and indirect language interpretation. The present research examined the influence of mood, using Forgas' (1995) affect infusion model (AIM), on the interpretation of indirect meaning (Holtgraves, 1998). Following a mood induction task, participants engaged in a computerized language task (Holtgraves, 2000). Following the AIM, it was predicted that as reply-type became more complex and ambiguous, mood would have a greater influence on the interpretation of the reply-type as positive or negative. The results of the study did not follow from the predictions and the reasons for this are discussed.

The Effect of Mood on Language Interpretation

For centuries the Western tradition has generally tried to avoid emotion and distance rational thought from it. This view, as well as the view that the mind can exist independently of the body, was challenged by the neurologist Antonio Damasio (1994). In his work, Damasio postulates that not only are the body and emotion necessary for daily functioning, but they are especially necessary for rational thought. In the past 30 years, there has been research on the influence of emotion for thought, but despite the seemingly obvious implications of emotion on interpersonal processes, there has been a dearth of research on the role of mood in complex interpersonal processes (Forgas, 1999a). In this introduction I will discuss how emotion is viewed, the effect of emotion on memory, and the ways in which emotion influences thought and judgment. Following the discussion of emotion, I will present a study that will investigate how indirect speech is interpreted and how emotion might play a role in its comprehension.

Emotion and Cognition

Zajonc (1999) has argued that emotion and cognition are two distinct processes (Damasio, 1994; Draine & Greenwald, 1999) because affective stimuli can be presented and detected below the conscious level. The method most often used to test Zajonc's hypothesis is priming, the presentation of stimuli to participants for 300 milliseconds or less (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). Participants primed with a negative stimulus such as a frowning face (Murphy & Zajonc, 1987) are temporarily induced into a negative mood. Because mood is affected without conscious awareness, Zajonc (1980, 1999) argues that the two systems are distinct although they interact. Another important finding with unconscious priming is that people primed with a particular category are

quicker to respond to conscious stimuli matching that category (Reisberg, 2006); for example, unconscious priming of the word "doctor" leads to a quicker reaction for the conscious presentation of "nurse."

Emotion and Memory

Researchers have studied the effects of emotion on memory. Bower (1981) reports that subjects experimentally induced into a particular mood for a memorization task have better recall if the recall-mood matches the learning-mood. This task is an affective reinterpretation of the classic experiment conducted by Godden and Baddeley on the effect of context on memory (described in Baddeley, 1990). In the Godden and Baddeley experiment, scuba divers were put into two conditions: one in which they were submerged in water or another in which they were put on a beach. Once in the condition, the participants were given lists of words to memorize. Later, the participants tried to recall the words they had memorized; the results showed that the participants had better recall if they remembered the words in the context (submerged in water or on the beach) they had originally learned them. However, Eich (1995) postulated that the context-effect of Godden and Baddeley is more dependent on how the participants felt in the context than the mere context itself.

Mayer, McCormick, and Strong (1995) showed that participants are more likely to recall words from a list that describes the mood they are currently in than words that do not describe their mood. Another study, conducted by Hermans, De Houwer, and Eelen (1994), showed that people recognize words on a lexical decision task faster if the word's meaning is similar to the affective state of the participant than if the word is dissimilar. All of these studies are based on an associative view of thought: memories are

linked based on similar content. For example, the word "doctor" makes accessible the words "nurse" and "hospital" in thought; the word "doctor" also makes it harder to activate an unrelated concept such as "lemon." An affective associative network links memories to not only similar content, but also to expressive physical responses, physiological reactions, situations, and ways to react when experiencing emotions (Berkowitz, 2000).

Process-Based Emotion

Early research on emotion and cognition focused on memory. Newer research on mood has focused on process-based theories and social interaction (Forgas, 1995, 1999b; Smith & Kirby, 1999). One study showed that after being induced into a positive mood, participants were more likely to express positive views about a target person than participants in a negative mood; conversely, induced negative moods had little effect on participants' evaluations (Forgas & Bower, 1987). Johnson and Tversky (1983) found that people's moods affected their estimates of occurrences of bad events (e.g., street crime); people in negative moods over-estimated the occurrences, while people in positive moods underestimated the occurrences. When mood affects cognition and behavior, it is referred to as *mood congruency*.

One explanation for mood congruency is the mood-as-information (MAI) hypothesis (Clore & Parrott, 1991; Schwarz & Clore, 1983). This view says that people in ambiguous situations use their affective state as information for how they feel about something, much akin to Bem's (1972) self-perception theory. With the MAI analysis, people have to attribute their feelings to a salient target; from there, they judge the target.

Following the logic of MAI, if people are in good moods they will attribute good feelings towards a target; people in bad moods will attribute bad feelings to a target.

An alternative explanation for mood congruency was postulated by Forgas (1995). His theory, the affect infusion model (AIM), also builds on the MAI analysis; affect infusion occurs when mood influences thought. Forgas (1995) says that there are four information processing strategies. First, there is the "direct-access strategy"; this relies on preexisting evaluations for reaching judgments. Second, there is motivated processing, "strong and specific motivational pressures for a particular judgmental outcome" (Forgas, 1995, p. 47). These first two strategies are considered low affect infusion strategies because they are closed and do not allow for affective influence. The third strategy, the "heuristic processing" strategy, occurs when "the target is simple or highly typical, the personal relevance of the judgment is low, there are no specific motivational objectives … and the situation does not demand accuracy or detailed consideration" (Forgas, 1995, p. 47). The fourth and final strategy is "substantive processing"; this occurs when a situation demands detailed and constructive thought, the person is not motivated in a particular direction, and the person has enough cognitive capacity. The last two strategies are high affect infusion strategies. Whereas the first two strategies are not influenced by affect, the third is subsumed by MAI. The AIM predicts that the fourth processing strategy, substantive processing, leads to the greatest affect infusion (Berkowitz, 2000; Forgas, 1995).

Particular moods have different effects. Schwarz and Bless (1991) stated that people with happy moods tend to use simple processing, heuristics, and effortless thinking. Seen as a reaction to the environment, moods can reflect danger or safety. A

person in a good mood is presumably in a safe environment that does not require novel ways of dealing and interacting with said environment; a bad mood, however, can indicate to a person that she is in a dangerous or new situation that requires thought significantly different from thought based on previous experience. People in positive moods tend to use top-down processing and general knowledge structures (Bless et al., 1996); this leads to greater out-group discrimination (Forgas & Fiedler, 1996). People in negative moods tend to use effortful, bottom-up processing. Several researchers (Isen, 1993; Schwarz & Bless, 1991) agree that positive mood can lead to greater risk taking and creativity than negative mood. Isen's (1993) stance is that positive moods activate a greater range of associative knowledge. Bless et al. (1996) say that because positive moods rely on scripts, people have more cognitive resources for processing other data. The nature of positive affect, therefore, is debated (Forgas, 2002; Isen, 2002).

Emotion and Language

Forgas (1999a, 1999c) has bridged the gap between emotion, cognition, and language interpretation. In these works, Forgas investigates the relationship between mood and politeness. Politeness is a cognitive-intensive process based heavily on social norms (Brown & Levinson, 1987; Clark & Schunk, 1980; Holtgraves, 2002). People who make requests must balance their desire for "instrumental objectives" and "interpersonal considerations" (Forgas, 1999a): requests must be comprehendible, yet respect the imposition posed to others.

Forgas (1999a) said that, "[t]o the extent that request production requires elaborate inferences as speakers monitor and interpret the situational requirements of the encounter, mood is likely to infuse their responses" (p. 860). Forgas (1999a, 1999c)

found, logically following the AIM, that mood does affect language use depending on the kind of information-processing strategy used by a person in a situation. Participants in negative moods preferred more polite request formations than did participants in positive moods and the mood effects were greater for more demanding situations.

Forgas has lamented that mood is not studied more in interactive social behavior, such as language (Forgas, 1999c). Most research dealing with emotion and language deals with simple associative-priming (Goetz, Goetz, & Robinson, 2007; Halberstadt, Niedenthal, & Kushner, 1995; Thomas & LaBar, 2005; Wurm & Vakoch, 2000), rather than the involved, substantive processing required for the AIM. Therefore, what are needed are empirical studies of the role of mood in the comprehension of complex linguistic stimuli.

Conversational Implicatures

One form of complex language is indirectness. For example, if one speaker asks a person if she can pass the salt, the question literally posed is if the person is capable of passing the salt. This meaning is different from its idiomatic use in language where the original speaker is requesting the person to give her or him salt.

The proposed model for the interpretation of indirect meaning that will be used for this study is Grice's (1975) theory of conversational implicatures. In this theory, meaning can go beyond what is literally said based on the operation of the cooperative principle. The cooperative principle is based on four conversation maxims. First, the conversational utterance must be as informative as necessary, without too much or too little detail (quantity). Second, the utterance must be true (quality). Third, the utterance should be clear and avoid indistinctness (manner). Fourth, the utterance should be

relevant to the conversation (relation). In the Gricean framework, participants in a conversation interpret language as if speakers were being informative, honest, clear, and relevant.

In conversations, people often violate the cooperative principle's maxims. Because both participants in a conversation assume adherence to the cooperative principle, a nonliteral meaning is inferred. In the previous conversational example, a speaker asked a person if he or she could pass the salt. This violates the relation maxim because the hearer's ability to pass salt is not the subject of discussion. The violation of the relation maxim leads the hearer to infer what is meant by the speaker – in this case, that the speaker wants the salt.

In Grice's (1975) framework, the salt example is a generalized implicature, a context-independent implicature. The form of implicature most important to the present study is Grice's particularized implicature. Particularized implicatures are context-dependent and require a consideration of the previous discourse context. The following is an example of a particularized implicature:

John: Did you like my conference presentation?

Paul: Conferences put a lot of pressure on speakers.

In this example, Paul is violating the relation maxim; literally, the fact that conferences may or may not put pressure on speakers has no direct relevance to the request of Paul's opinion. Following Paul's relevance violation, John will most likely infer Paul's intended meaning, that Paul did not like the presentation.

Politeness and Indirect Meaning

In the Gricean framework, a maxim violation signals an alternative meaning. Politeness is often expressed through indirectness (Brown & Levinson, 1987; Holtgraves, 1998). Politeness eases the burden imposed on a person's face, the public display of a person's self. Face is continually threatened in day-to-day social interaction. Requests and disagreements threaten people's face. Politeness bridges the gap between the need to protect face and the need for social interaction. Requests for action, such as passing salt, and requests for information are an every day necessity.

Politeness minimizes this imposition of daily interaction (Holtgraves, 2002). Because of the nature of politeness, people can interpret indirect utterances as a way of managing face. In the previous example of John and Paul, indirectness could be interpreted to mean that Paul did not like John's presentation; Paul is merely being polite, hence indirect, in his response. An indirect, polite response will often be interpreted as conveying negative information (Holtgraves, 1998). Due to the affective nature of indirect language and its interpersonal complexity, it is apt for study in emotion research.

Present Study

The research on affect and social cognition suggests that people in social situations will often refer to their feelings when making judgments. This can occur when judging others (Forgas & Bower, 1987) or being polite (Forgas, 1999a). Interpreting indirect language requires a judgment; therefore, this research suggests that mood will play a role in this interpretation process. Forgas' (1995) affect infusion model predicts that people will often refer to their emotions for heuristic processing, but especially for

substantive processing. As indirect replies become more ambiguous and effortful, mood should play a greater role in the interpretation process.

In the present study, I investigated the effect of induced emotional states on participants' interpretations of conversational utterances, a complex social interaction (Holtgraves, 2002). The temporarily-induced emotional states were happiness and sadness to avoid the ambiguity of states such as anger (Beck, 1976; Berkowitz, 2000). When the participants were presented situational-contexts and utterances to interpret, their mood was predicted to influence their judgment of utterances as either negative or positive. This was predicted because people tend to interpret others and their actions respective to their mood (Berkowitz, 2001); also, indirect meaning is often construed as a form of politeness, with potentially negative meaning skirted. The mood and interpretation effect was predicted to be made even greater by the complexity of the situational-context: as situations are more foreign, less scripted, demanding, and more constructive, affect infusion was predicted to be greater.

First, I predicted that participants with negative moods would be more inclined than participants with positive or neutral moods to interpret indirect utterances as negative. Second, I predicted that as reply-type complexity increased, negative mood would have a greater impact on interpretation, parallel with the predictions of the affect infusion model, than positive and neutral moods. In the present study, two types of replies were examined: excuses (which are less complex and require relatively less extensive processing) and topic changes (which are more complex and require more extensive processing). In previous research (Holtgraves, 1998), excuses took less time to process and topic changes required more time, indicating that topic changes required

more extensive processing. I predicted that participants in the negative mood condition should make more negative interpretations of indirect replies than participants in positive and neutral conditions. Third, I predicted that the reaction times of judgments for participants in negative moods would be faster than the judgments of participants in positive and neutral moods when presented with negative stimuli. I predicted this would occur because their negative moods should make a negative interpretation more accessible. Fourth, I predicted that as reply-type complexity increased (excuses vs. topic change), negative mood would have a greater impact on reaction times than positive and neutral moods.

Method

Participants

I used 104 research participants (50 females and 54 males) from Ball State University's introductory psychology course. Participants in the introductory psychology subject pool received partial course credit for participating in the research. All participants were native English speakers. In addition, due to the use of computers for reaction time, all participants had 20/20 or corrected-to-normal vision. Most of the previous research conducted on both mood and language interpretation has used student populations.

Design

The experiment was a 3 (mood: positive vs. negative vs. neutral) x 2 (situation: opinion vs. self-disclosure) x 2 (reply type: excuse vs. topic change) design. I compared participants' interpretation and interpretation speed on both reply types (excuse vs. topic

change) for both situations (opinion vs. self-disclosure) as a function of mood (positive vs. negative vs. neutral), which was a between-subjects variable.

Procedure

Participants were first given an informed consent sheet (see Appendix A) briefly describing the research as a study on social interaction and memory. After consenting, the participants were told that there were three parts to the study: the first part was a study on memory; the second part was a study on speech; the third and final part of the study was a recall task. The first part of the study began with mood induction, i.e., the memory task. After the mood induction, participants engaged in the computerized language task. Following the computerized language task, participants engaged in a mood manipulation check under the guise of a memory recall assessment.

Mood induction

Mood induction was accomplished by an autobiographical memory task (see Appendices B and C). Participants in the neutral mood condition were asked to recall general experiences (see Appendix D). In the autobiographical task, participants were asked to remember a recent experience as vividly as possible; participants in the positive mood condition were asked to recall experiences where they were happy while participants in the negative mood condition were asked to recall experiences when they were sad. The participants were also instructed to write about the experience for 7 minutes while trying to picture what they actually did and how they felt. This method has been used frequently to induce moods of particular valences (Forgas & Locke, 2005). Participants in the neutral condition were asked to detail for 7 minutes where they have been on campus.

Following the mood induction task, participants completed a line-bisection task. This task consisted of 20 lines bisected in the middle, with 5 lines where the left side is longer, 5 lines where the right side is longer, and 10 lines where both sides are equal. Participants then judged which side of the line they perceived to be the longest. This task was used to create a (roughly 2 minute) delay between the mood induction task and the language task so that the origin of the current mood was not attributed to the mood induction task.

Language task

After the autobiographical memory task, participants engaged in a computerized language task using E-Prime reaction time software. The computerized language task began with instructions on how to complete the task. After each screen of instructions, participants had to press the "Enter" button on a response box. The last instruction screen preceded the practice trials. Participants were told to be as quick and as accurate as possible when reading, interpreting, and responding on the language task. There were six practice trials preceding the task. Each trial of the computerized language task presented a scenario with a brief description of a situation involving two people. Participants had to press the "Enter" button to go to the next screen. The trial then presented a question-answer exchange between the two people by showing the first person's remark; the "Enter" button had to be pressed to go to the second person's response. After the enter key was pushed, the screen went blank for 1000 ms, followed by a 500-HZ tone for 50 ms; the tone alerts participants and prepares them for upcoming stimuli. The second person's response then followed in the middle of the screen. After the second person's response was read and understood, the "Enter" button had to be pushed. After the

exchange, the screen went blank for 1000 ms, a 500-HZ tone was sounded for 50 ms, and an interpretation of the second person's remark was presented in the middle of the screen. Participants then indicated whether they thought the presented interpretation was valid by pressing a "yes" or "no" key on a response box. The participant's response, as well as the response time, was recorded by E-Prime computer software. For each critical trial, the interpretation was negative; for filler trials the interpretation was either positive or literal. Every participant saw all critical (16) and filler trials (16), for a total of 32 trials (see Appendix E and F). These materials were adapted from Holtgraves (2000).

There were two situations (opinions and disclosures), with eight scenarios each. Participants saw 8 excuses and 8 opinions for the critical trials. In one situation, the first speaker requests an opinion from the second speaker about the first speaker. In the other situation, the first speaker asks the second speaker to disclose something. There were two types of replies: excuses and topic changes. Each of these reply-types violated the relevance maxim because they did not directly provide requested information. One type of reply represents an excuse for why the requested information may be negative (excuse). The other type of reply was not related whatsoever to the first person's remark (topic change). The following is an example of an opinion situation and interpretation:

> Jack is talking with Mike, an acquaintance of his. Jack gave a party last week that Mike attended. Jack wants to know what Mike thought of the party.
>
> Jack: Did you enjoy yourself at my party?
>
> Mike: It's hard to give a good party. (Excuse)
>
> I expect to graduate next year. (Topic change)

Interpretation: I didn't enjoy the party.

Mood manipulation check

To ascertain the impact of the mood manipulation (autobiographical memory task) on mood, I presented two 7-point self-rating scales (alert-tired; sad-happy). These scales were presented within the ostensible guise of a memory recall task (see Appendix G). This method is commonly used by Forgas (J. Forgas, personal communication, December 17, 2007). The memory recall task was used to check if the mood manipulation worked. If the mood manipulation was not found to work, the mood check (see Appendix G question 3) would have been used to categorize participants based on their scores into mood conditions for further analyses.

Results

Preliminary Analyses

Before the primary analyses were conducted, the reaction times of participants on the critical trials were inspected. Trials under 500 ms (not enough time to process the stimuli and make judgment) and above 7500 ms (excessive amount of time to process stimuli and make judgment) were treated as outliers and not included in the analyses, a common practice in studies of this nature (Holtgraves, 1998). This led to the loss of 1.2% (under 500 ms) and .8% (over 7500 ms) of the trials. One participant was discarded from analyses for not following directions. Another participant was discarded from analyses due to equipment malfunction. The experiment had three experimenters, so an analysis was conducted to test for experimenter effects. The results were not significant for negative endorsements $F(2, 99) = 2.893$, $p = .06$ nor the reaction times for negatively endorsed trials, $F(2, 99) = .193$, $p = .825$.

Manipulation Check

An analysis was conducted to determine if the mood manipulation had the intended effect. The means are reported in Table 1. The mood manipulation yielded significant results $F(2, 99) = 4.027$, $p = .021$. Participants in the positive mood condition had a more positive mood score ($M = 2.71$, $SD = .93$) than negative condition participants ($M = 3.46$, $SD = 1.31$), and neutral participants ($M = 3.16$, $SD = 1.02$), where the higher the mood score the more negative the mood. A Tukey HSD post hoc comparison found a significant difference between positive and negative, $p = .016$. There was not a significant difference between positive and neutral conditions, $p = .233$, or negative and neutral conditions, $p = .506$. Arousal (see Appendix G question 5), a potential confounding variable, was not significantly correlated with negative endorsements, $r(102) = -.003$, $p = .975$, or reaction times for negative endorsements, $r(102) = -.023$, $p = .818$.

Primary Analyses

My dependent variables were the number of negative interpretation judgments and interpretation speed. Each was analyzed with a 2 x 3 (Reply-Type x Mood) factorial Analysis of Variance (ANOVA). My first hypothesis was that participants in negative moods will interpret indirect meanings more negatively than people in positive or neutral moods. Therefore, I expected a main effect for mood on negative interpretation judgments. My second hypothesis was that mood infusion should influence interpretation even more substantially for complex particularized implicatures (topic changes) than for less complex excuses. Therefore, I expected that the difference between negative mood and the other mood conditions would be greater for the interpretation of topic changes than for excuses, a Mood x Reply-Type interaction. My third hypothesis was that

negative interpretations should be faster for people in negative moods than positive and neutral moods. Therefore, I expected a main effect for mood on interpretation speed. My fourth hypothesis was that the difference between negative mood and the other mood conditions would be greater for interpretation speed for complex replies (topic changes) than less complex replies (excuses). Therefore, I expected an interaction between mood and reply type for the dependent variable interpretation speed.

The first hypothesis predicted that participants in the negative mood condition would make more negative endorsements than participants in positive and neutral conditions. There was not a significant mood effect for negative endorsements, $F(2, 99) = .078$, $p = .926$. The means, expressed as percentages of critical trials, are reported in Table 2.

My second hypothesis was that as reply-type complexity increases (i.e., topic changes), the effect of mood would be greater, and thus that participants in the negative condition would make more negative interpretations than participants in the positive and neutral conditions; this follows the affect infusion model's prediction. The predicted Mood x Reply Type interaction was not significant, $F(2, 99) = .181$, $p = .834$. Participants in the negative mood condition actually made slightly less negative endorsements than participants in the positive condition for both excuses and topic changes. The means, expressed as percentages of critical trials, are reported in Table 2.

My third hypothesis was that participants in the negative condition would have faster reaction times for negative endorsements than participants in positive and neutral conditions. An analysis of variance of the reaction time of negative endorsements was conducted. The predicted main effect for mood was not significant, $F(2, 99) = .474$, $p =$

.624. The means are reported in Table 3. To further ascertain a relationship between the resultant mood of the participants and their reaction times, a correlation was conducted. A Pearson's correlation between the mood check (Appendix G) and the reaction time of reply-types was not significant for excuses, $r(102) = -.137$, $p = .169$; or topic changes, $r(102) = .074$, $p = .458$.

My final prediction was that the effect of mood would be greater for topic changes than for excuses, and thus that reaction times would be faster for topic changes for participants in the negative mood condition than positive and neutral conditions, a Mood x Reply-Type interaction; this would follow the affect infusion model. This prediction was not confirmed $F(2,99) = 2.257$, $p = .110$. The participants in both the neutral and positive mood conditions were slightly faster for both reply-types than participants in the negative mood condition. The means are reported in Table 3.

Additional Findings

There was a significant main effect for situation (opinion vs. self-disclosure) with negative endorsements, $F(1, 99) = 56.70$, $p < .001$. Participants made more negative interpretations for self-disclosure ($M = 80.6$; $SD = 2.0$) trials than opinion trials ($M = 62.7$; $SD = 2.9$). The means are reported in Table 4. This result does not match the results of previous research (Holtgraves, 1998).

There was a significant effect for reply-type (excuse vs. topic change), $F(1, 99) = 57.09$, $p < .001$. Participants made more negative interpretations for excuses ($M = 82.3$; $SD = 1.8$) than for topic changes ($M = 61$; $SD = 3.1$). The means, which follow the pattern of previous research (Holtgraves, 1998), are reported in Table 4. The interaction

between situation and reply-type was marginally significant for negative endorsements, $F(1, 99) = 3.04$, $p = .08$. The means are reported in Table 4.

Secondary Analyses

An analysis was conducted on the reaction times for the comprehension of replies (the remark preceding the judgment). Though not predicted, the reply speed could potentially be influenced by mood. An analysis of variance was conducted to examine the effects of mood on the reply speed and the results were not significant, $F(2, 99) = .146$, $p = .864$. A Pearson's correlation was conducted between the mood check scores and the reaction times of the reply-types, but it was not significant for excuses, $r(102) = -.042$, $p = .674$; or topic changes, $r(102) = .035$, $p = .726$.

An analysis was conducted on the effect of gender of participants on negative endorsements, but was found to be not significant, $F(1, 100) = 1.071$, $p = .303$; the effect of gender on reaction times of negative endorsements was also not significant, $F(1, 100) = 1.026$, $p = .314$.

The neutral condition did not significantly differ from the positive or negative conditions on the mood manipulation check, though the positive and negative conditions were significantly different, so an analysis was conducted with the neutral condition removed. In this analysis, the interaction between mood and reply-type was significant for reaction time, $F(1, 68) = 4.073$, $p = .048$. The means are reported in Table 5. A simple effects analysis was conducted and the results were not significant for excuses, $F(1, 68) = .354$, $p = .554$. However, for topic changes, people in a negative mood were marginally significantly slower than people in a positive mood $F(1, 68) = 2.888$, $p = .094$.

With the neutral condition removed, the interaction between mood and reply-type was not significant for number of negative endorsements, $F(1, 68) = .161$, $p = .689$.

Discussion

The present study investigated the effect of mood on the interpretation of indirect meaning. Indirect meaning, by its nature, is ambiguous. Forgas' (1995) affect infusion model predicts that the more a situation requires detailed and constructive thought, the more that affect should influence thought. A social situation involving indirect language would fit the criteria of requiring detailed and constructive thought. Excuses and topic changes, based on Holtgraves' (1998) model of indirect replies, represent ambiguous social situations.

The results from the study do not show a strong influence of mood on the interpretation of indirect language as predicted. Participants in the negative mood condition did not make more negative interpretations, nor did they make them faster, than participants in the positive and neutral mood conditions. There are three possible reasons for this. First, people in positive moods may make decisions more quickly (Berkowitz, 2000). People in positive moods may also feel relatively more comfortable interpreting indirect meaning negatively. Because they are in a positive, and potentially secure, mood, negative meaning may not bother them. This is related to a second explanation: emotional regulation may have caused participants in the negative condition to compensate for their mood (Berkowitz, 2000). If participants understood that they were in a negative mood, they could have compensated by endorsing a positive interpretation, or at least given more credence to an alternative interpretation. Hence, they may have attempted to regulate their mood by perceiving the replies in a positive way. Third, the mood manipulation, though significant, may not have been strong enough to have a substantial impact on affect and cognition. The negative mood condition, while showing

a significant difference from the positive mood condition, was not substantially negative like previous research (Forgas, 1999a; 1999c; Forgas & Locke, 2005). Other methods, such as mood inducing videos or music, could have been combined with the memory task to possibly create a greater difference in positive and negative mood.

Future research could investigate two important areas touched on by this study. First, it would be beneficial to know in which types of situations mood-congruent infusion occurs (e.g., negative moods leading to negative inferences). Forgas (1999a; 1999c), Johnson and Tversky (1983), and others have shown instances of mood-congruent infusion. Are there social situations, though, where mood-congruence is less involved and other aspects of mood, such as emotional content, influence thought? For example, are people more likely to make mood-congruent judgments with outgroups but not with politeness? Also, in what situations does a positive mood incline a person to make a positive judgment (i.e., infusion), a more accurate judgment, or a negative judgment?

Forgas (1995) and Isen (2002) argue that positive and negative affect have their own nuanced influence on thought. Forgas (1995) portrays negative affect as influencing people to use effortful, bottom-up processing; positive affect, then, influence people to use top-down, simplistic thought. Isen (2002), on the other hand, argues that positive affect influences people to use "careful, effective, thorough thought and problem solving" (p. 57) and gives them "the ability to take multiple factors into account simultaneously and deal realistically with whatever is necessary in the situation" (p. 58). Isen, then, argues that positive affect allows for more complex reasoning and allows people to "switch perspectives or entertain alternative perspectives to deal with data and solve a

problem" (p. 58). Because people in positive moods may be more realistic and less defensive, they may make more accurate judgments in interpersonal contexts, and thus, may be inclined to make more negative judgments in contexts in which politeness is used. The significant interaction between mood and reply-type with the neutral condition removed for reaction time is consistent with Isen's view of positive affect.

Second, there may be personality factors involved. Further research could investigate if there is a dispositional difference between people who lean towards infused judgments or another process. One type of person may be inclined to interpret an ambiguous situation respective to their mood, while another type of person may be influenced by an emotional-content process where, for example, negative affect leads to bottom-up processing. There may also be a dispositional difference in emotional regulation when judgment is made under the influence of affect. Some people may try to over-compensate (e.g., being too positive because they are in a negative mood) or may be inclined towards optimism (e.g., when in a bad mood may try to see a positive interpretation or an incomprehensible/elusive interpretation). Because the origin of the mood should be out of consciousness, there may also be a type of individual that unconsciously regulates emotion.

The results of this study and future research are important for two reasons. First, such research contributes to the body of knowledge on emotion, cognition, linguistics, and their interaction. There is a dearth of research examining the relationship between affect and pragmatic language. Second, and more specifically, the results of this research could help people avoid incorrectly interpreting indirect responses due to mood effects. For example, awareness of these findings could aid in business negotiations to ensure that

involved parties do not misconstrue the meaning of indirect replies due to mood. The business world is very formal in nature, so it makes intuitive sense that indirect language would be used. Because of the business world's formal nature, future research in affect and indirectness could help avoid costly misunderstandings.

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Appendix A

Informed Consent

Memory and Interpersonal Processes

In this research we are examining how social interaction affects people's memories. In this particular study, we are examining how people's memories endure following simulated interaction.

You must be 18 years of age or older to participate in this study. The study should take about 40 minutes to complete and you will receive one hour credit for your participation. The foreseeable risks from participating in this study are minimal as there is a small possibility that answering some of these questions may evoke feelings of anxiety. Counseling services are available to you through the Counseling Center at Ball State University (765-285-1736) if you develop uncomfortable feelings during your participation in this research project. Because of our procedures, you cannot be told of everything that is being investigated in this study. However, once you have completed the task you will be given a detailed explanation of the study. We hope you find the task interesting. At the least, participating in this study will give you the opportunity to see how researchers typically conduct research in social psychology.

Participation in this study is completely voluntary and you may decide not to participate at any time without prejudice form the investigator. If you decide not to finish the project, you will still be given research credit. Please feel free to ask any questions of the investigator before signing the consent form.

For one's rights as a research subject, the following person may be contacted: Ms. Melanie Morris, Coordinator of Research Compliance, Office of Academic Research and Sponsored Programs, Ball State University, Muncie, IN 47306, (765) 285-5070.

****

I, _____, agree to participate in this study titled Memory and Interpersonal Processes. I have had the study clearly explained to me and any questions I have had were answered to my satisfaction. I have read this description of the study and give my consent to participate. I understand that I will receive a copy of this Informed Consent form for future reference.

_____ _____

Participant's Signature Date

Principal Investigator: Adam Felton

Faculty Supervisor: Thomas Holtgraves, Ph.D.
Department of Psychological Science
Ball State University

Appendix B

Autobiographical Memory Task (Positive Mood)

For this task we'd like you to try and recall a recent experience where you were happy. Try to remember what happened, what was said and how you felt. Write about the experience in the space provided. Once you have finished writing about the experiences, write down 3 adjectives that summarize how you felt. You will be asked about this experience at a later point in the experiment. You will have 7 minutes to remember the experience and write about it.

Please keep in mind that your responses are totally anonymous and that there are no correct or incorrect answers with this task.

Appendix C

Autobiographical Memory Task (Negative Mood)

For this task we'd like you to try and recall a recent experience where you were sad. Try to remember what happened, what was said, and how you felt. Write about the experience in the space provided. Once you have finished writing about the experiences, write down 3 adjectives that summarize how you felt. You will be asked about this experience at a later point in the experiment. You will have 7 minutes to remember the experience and write about it.

Please keep in mind that your responses are totally anonymous and that there are no correct or incorrect answers with this task.

Appendix D

Autobiographical Memory Task (Neutral Mood)

For this task we'd like you to try and recall how many different buildings you have visited on campus. Try to recall what was in the buildings, how many people were there, and why you were there. Write about the experience in the space provided. Once you have finished writing about the experiences, write down 3 building names where you spend most of your time. You will be asked about these experiences at a later point in the experiment. You will have 7 minutes to remember the experience and write about it.

Please keep in mind that your responses are totally anonymous and that there are no correct or incorrect answers with this task.

Appendix E

Critical Trials

Opinions:

1. Jack is talking with Mike, an acquaintance of his. Jack gave a party last week that Mike attended. Jack wants to know what Mike thought of the party.

Jack: Did you enjoy yourself at my party?

Mike: It's hard to give a good party. (Excuse)

I expect to graduate next year. (Topic change)

Interpretation: I didn't enjoy the party.

2. Sarah and Angela are taking the same History class. Students in this class have to give a 20 minute presentation to the class on some topic. Sarah gave her presentation and then decided to ask Angie what she thought of it.

Sarah: What did you think of my presentation?

Angela: It's hard to give a good presentation. (Excuse)

I hope I win the lottery tonight. (Topic change)

Interpretation: I didn't like your presentation.

3. Martha and Sally work together in the same office. They both like to shop, especially for clothes. Martha recently bought a new coat and wants to find out what Sally thinks of it.

Martha: What do you think of my new coat?

Sally: It's hard to find good clothes in this town. (Excuse)

I heard the boss is planning to expand. (Topic change)

Interpretation: I don't like your new coat.

4. Fran is a high school student who is taking history from Mr. White. She recently turned in a term paper in this course and she is curious to know how she did. When she sees Mr. White she asks him.

Fran: What did you think of my term paper?

Mr. White: That was a very difficult assignment. (Excuse)

I'm going to paint my house. (Topic change)

Interpretation: I didn't like your paper.

5. Heather and Ann share an apartment. Recently, Heather got her hair cut and styled. She wants to find out what Ann thinks of it and so she asks her.

Heather: Do you like my new hair style?

Ann: It's hard to find a good hair stylist. (Excuse)

I'd like to have the apartment painted. (Topic change)

Interpretation: I don't like your new hair style.

6. Jack and Julie have been married for 6 months. One night Jack cooked a gourmet meal. Midway through the meal he asks Julie if she likes it.

Jack: How do you like the meal?

Julie: It's hard to cook a gourmet meal. (Excuse)

We should repaint the house. (Topic change)

Interpretation: I don't like the meal.

7. Al is taking a painting class this semester. One day his friend Charles is visiting him. Charles is looking at the paintings and Al wants to know what he thinks of them.

Al: Do you like my paintings?

Charles: Painting with oil is very difficult. (Excuse)

I'm going to Mexico this summer. (Topic change)

Interpretation: I don't like your paintings.

8. Don was visiting his friend Dave in Atlanta. After spending a few days, Dave asks Don what he thinks of Atlanta.

Dave: How do you like Atlanta?

Don: I think it's hectic in Atlanta.(Excuse)

I'm thinking of buying an airplane. (Topic change)

Interpretation: I don't like Atlanta.

Disclosures:

1. Margaret and Chelsea are friends. Margaret is taking introductory chemistry this semester and Chelsea wants to know how she is doing in the course.

Chelsea: How are you doing in chemistry?

Margaret: Chemistry is a very difficult course. (Excuse)

I watched the basketball game yesterday. (Topic change)

Interpretation: I'm not doing well in Chemistry.

2. Jim is in seventh grade. He just got home from school and his mother met him at the door. Report cards were due today and she's curious about how well Jim did.

Mom: How were your grades this semester?

Jim: I don't think the teacher grades fairly. (Excuse)

It snowed very hard last night. (Topic change)

Interpretation: My grades aren't very good.

3. Tara ran into her old friend Ellen. She hadn't seen Ellen for a while and wanted to catch up on what was going on. They were talking about married life. Tara had heard that Ellen was recently divorced and she asked her if this was true.

Tara: Did you just get divorced?

Ellen: I think we married too young. (Excuse)

This city is sure growing fast. (Topic change)

Interpretation: I just got a divorce.

4. Ken and Bob are college students who know each other fairly well. Last Friday, Bob told Ken he was thinking of asking out Paula - a mutual acquaintance of theirs. Ken wonders if Paula went out with him.

Ken: Did Paula agree to go out with you?

Bob: She's not my type. (Excuse)

I have an exam today. (Topic change)

Interpretation: She wouldn't go out with me.

5. Bill and Larry were talking after class early in the spring semester. Bill had heard that Larry was arrested for driving under the influence during finals week the previous semester. He decides to ask him about it.

Bill: Did you get arrested for driving under the influence?

Larry: It's hard not to celebrate the end of the semester. (Excuse)

I hope that we can go to the concert next week. (Topic change)

Interpretation: I was arrested for driving under the influence.

6. Carol ran into her friend Christy. She knew Christy was on the job market and she was curious as to whether she had gotten a job.

Carol: Did you get that job you applied for?

Christy: I need to improve my interview skills. (Excuse)

I'm so tired of this cold weather. (Topic change)

Interpretation: I didn't get the job.

7. Sarah and Sam are old friends who ran into each other at the mall. Sarah and Sam used to work for the same company. Sarah wants to ask Sam if he has gotten a raise.

Sarah: Did you get a raise yet?

Sam: The economy is still bad. (Excuse)

I can't wait for spring. (Topic change)

Interpretation: I didn't get a raise.

8. Hank and Paul are roommates. They usually play golf together on Saturday. This Saturday, however, Paul went alone. When he returns, Hank wants to find out how well he did.

Hank: How did you do at golf today?

Paul: I think I need glasses. (Excuse)

The Pacers are on TV. (Topic change)

Interpretation: I didn't do well at golf today.

Appendix F

Filler Trials

Opinions

Excuses w/ positive interpretation

1. Michael Johnson was recording his new album at the Santa Sonic recording studio. Michael and his producer, Al, were listening to a track. Michael wondered what Al thought of it.

Michael: How does it sound to you?

Al: This track was hard to record.

Interpretation: I sincerely like the track.

2. John and Mary were at the movies. John thought the movie was not very good and he was bored. He thought he'd see if Mary wanted to leave.

John: This movie is boring me to death.

Mary: This movie does not have a lot of action in it.

Interpretation: I really like the movie.

Topic Changes w/ positive interpretation

3. Ann and Beth were good friends and Ann was teaching Beth how to play tennis. After several sessions Beth decided to ask Ann what she thought of her tennis ability.

Beth: Do you think I'll ever be very good at tennis?

Ann: I wonder what's on television tonight?

Interpretation: I think Beth will eventually be good at tennis.

4. Megan and Amber have the same major and take many of the same classes. One day Megan asks Amber to look over a term paper she had just written.

Megan: Well, what do you think of my term paper?

Amber: I like my new shoes.

Interpretation: I like Megan's paper.

Excuses with literal interpretations

5. Art recently bought a car. He didn't have much money and so he bought a used car that was in very rough shape. He went home one weekend and showed his car to his sister Susan.

Art: How do you like my new car?

Susan: It's hard to get a nice car on a limited budget.

Interpretation: I think it really is hard to get a nice car on a small budget.

6. Jan recently redecorated her house. Her friend Pam was visiting and she wanted to know what Pam thought of her effort.

Jan: We just redecorated. Do you like it?

Pam: You changed the curtains.

Interpretation: I think Jan really did change the curtains.

Topic changes with literal interpretations

7. Marty decided he was overweight and needed to diet. So he started to diet on New Years day. Marty didn't have a lot of will power and he often broke his diet. One day he decided to ask his friend Ben if he noticed the results of his diet.

Marty: What do you think of the results of my diet?

Ben: I bought new candles today.

Interpretation: I bought new candles.

8. Nate won a starring role in the local theatre production of Les Miserables. After months of work the play debuts. Nate's friend Pete goes backstage after the performance.

Nate: What did you think?

Pete: How is your mom doing?

Interpretation: I am really concerned about how Nate's mother is doing.

Self-Disclosure

Type: Excuses with positive interpretations

1. Mike had applied to several different law schools. They were all very selective and prestigious schools and he didn't get admitted to any of them. His friend Shaun asks him if he was admitted to any law schools.

Shaun: Did you get in to any law schools?

Mike: Law school is difficult to get into.

Interpretation: I got into law school.

2. Laura worked on a group project in one of her history classes. Due to the project, she did not do well in the class. Her dad wants to know how she did in the class.

Dad: How did you do in your history class?

Laura: That class was hard.

Interpretation: I am proud of how I did in the class.

Type: Topic changes with positive interpretations

3. Sharon and Kathy were talking at a party. Sharon asks Kathy if she was still going out with Doug.

Sharon: Are you still going out with Doug?

Kathy: I bought a new video game.

Interpretation: Doug and I are still together.

4. Sally told everyone she knew that she was going to get a new car. Her friend Mavis asks her about it.

Mavis: Did you get that new car?

Sally: I had a weird dream last night.

Interpretation: I bought the new car.

Type: Excuse with literal interpretation

5. Erica was applying to medical school. She recently took the required medical board exam. Her friend, Megan, wanted to know how well she did.

Megan: How did you do on the medical board exam?

Erica: I don't think the board is fair.

Interpretation: I think the board is not fair.

6. Amber went to see her advisor. They were trying to figure out what classes she should take next.

Advisor: What did you get in econ 101?

Amber: That was the hardest class I've ever taken.

Interpretation: Econ 101 was the hardest class I have ever taken.

Type: Topic change with literal interpretation

7. There's a mystery in the Smith family - someone scratched mom's car. And the parents want to know who did it. Mr. Smith thinks it was Jim.

Mr. Smith: Did you scratch the car?

Jim: I wonder if Evan is back with the groceries.

Interpretation: I think that Evan might be back home.

8. Andy and Bob frequently discuss current topics. One day, during a discussion of animal rights, they had the following exchange.

Andy: I heard you don't think animals should be used in medical experiments.

Bob: Did you see that Civil War documentary last night?

Interpretation: I want to know if you saw a documentary.

Appendix G

Memory Recall Task

1. How many people were in the experience that you wrote about in the previous memory task?

    A. I was alone

    B. One

    C. Two

    D. Three

    E. Four

    F. Five

    G. More than five

2. In the previous memory task, where were you?

    A. House

    B. Dorm room

    C. Apartment

    D. Outdoors

    E. Classroom

    F. Place of business

    G. Other

3. How do you feel now?

    A. Very happy

    B. Happy

    C. Somewhat happy

D. Neutral

E. Somewhat sad

F. Sad

G. Very sad

4. In the previous memory task, do you think you remembered most of the details?

A. All of the details.

B. A lot of the details.

C. A fair amount of the details.

D. Some details.

E. Did not remember a fair amount of the details.

F. Did not remember a lot of the details.

G. Did not remember any of the details.

5. How alert are you?

A. Excited

B. Alert

C. Somewhat alert

D. Neutral

E. Somewhat tired/calm

F. Tired/calm

G. Really tired/calm

6. In general, do you think you have a good memory?

A. I have an excellent memory.

B. I have a pretty good memory.

C. I have a good memory

D. My memory is ok.

E. I have a not-so-great memory.

F. I have a pretty bad memory.

G. I have a terrible memory.

Table 1

Mood Manipulation-Check

Mood condition	Means	Standard deviation	Sample size
Positive	2.71	.93	35
Negative	3.46	1.31	35
Neutral	3.16	1.02	32

Note: Higher scores indicate a more negative mood.

Table 2

Mean (Standard Deviation) Percentages of Negative Endorsements as a Function of Mood and Reply Type

	Reply type		
Mood condition	Excuse	Topic change	Mean
Positive	83.2 (3.1)	62.5 (5.4)	72.9 (3.7)
Negative	82.9 (3.1)	59.3 (5.4)	71.1 (3.8)
Neutral	80.9 (3.2)	61.3 (5.6)	71.1 (3.7)

Table 3

Mean (Standard Deviation) Reaction Times for Negative Endorsements for the Interaction Between Mood and Reply-Type

Mood	Reply types		
	Excuse	Topic changes	Mean
Positive	1899.124 (157.739)	1869.123 (118.376)	1884.123 (625.30)
Negative	2007.551 (157.739)	2090.218 (118.376)	2048.88 (777.09)
Neutral	1900.273 (164.968)	1998.676 (123.800)	1949.47 (727.67)

Table 4

Mean Percentage (Standard Deviation) of Negative Endorsements for Interaction Between Situation x Reply-Type

	Reply type		
Situation	Excuse	Topic change	Mean
Opinion	71.7 (3.0)	53.7 (3.8)	62.7 (2.9)
Self-disclosure	92.9 (1.5)	68.4 (3.2)	80.6 (2.0)
Mean	82.3 (1.8)	61 (3.1)	

Table 5

Means (Standard Deviation) for Mood x Reply-Type With Neutral Condition Removed

	Reply type	
Mood	Excuse	Topic change
Positive	2046.4 (117.125)	1721.846 (178.145)
Negative	1947.793 (117.125)	2149.976 (178.145)